POLYCHAETA OF WALLIS LAKE, NEW SOUTH WALES

PATRICIA HUTCHINGS*

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Synopsis

A systematic account of the polychaete fauna of Wallis Lake, New South Wales, is given. Five new species are described belonging to the genera, *Haploscoloplos*, *Barantolla*, *Euclymene*, *Lysilla* and *Rhinothelepus*, the latter being a new genus.

INTRODUCTION

The Polychaeta described in this paper were collected during an ecological survey of Wallis Lake, conducted by the Zoology Department of University of New South Wales.

Wallis Lake is a salt-water coastal lagoon on the central coast of New South Wales. The lake is approximately 12 miles long and 3 miles across at its widest point. The maximum depth of water is 16 feet. The lake is continually open to the sea at its northern end at Forster. Two small creeks flow into the northern part of the lake, which carry large amounts of fresh water after periods of prolonged rain.

All the polychaetes were collected from the eastern shores of the lake during December 1970, using a Smith-McIntyre grab. Thirty-two species of polychaetes were found, of which six are new species, and one of these is placed in a new genus. Five of these new species are described in this paper. Of the remaining species, four are new records for Australia and four have been described to genus only. Type material has been deposited in the Australian Museum (AM), British Museum (Natural History) (BM) and the Smithsonian Institution (USNM). The remainder of the collection has been deposited in the Australian Museum, apart from a small reference collection given to the Zoology Department, University of New South Wales.

The benthic communities and detailed descriptions of the habitats are being described by O'Gower, Dixon and Hutchings (in preparation), but a brief description of habitats and locality are given below (see Fig. 1).

STATIONS

Nine sites in Wallis Lake were selected, and at each site 50 replicate samples were collected.

1– 50	Sand-Booti Booti.
51–100	Mixed weed bed of marine angiosperms, opposite Yahoo Island.
101–150	Sand, just south of above.
151–200	Mainly sandy mud clay. Sparse *Halophila* (marine angiosperm), Charlotte Bay.
201–250	Just inshore of above, very thick weed and clayey mud, Charlotte Bay.
251–300	Sand, south of Godwin Island and opposite Wallis Island.
301–350	*Posidonia* Beds (marine angiosperm), just west of above.
351–400	*Zostera* Beds (marine angiosperm), just west of above.
401–450	Sand, fast flowing, just west of stations 301–350.

It may seem surprising that such a relatively small area as Wallis Lake should yield six new species, one of which is placed in a new genus and four new records for Australia ; but polychaetes have been neglected in Australia. The majority of Australian polychaete records are based upon work done at the

* The Australian Museum.

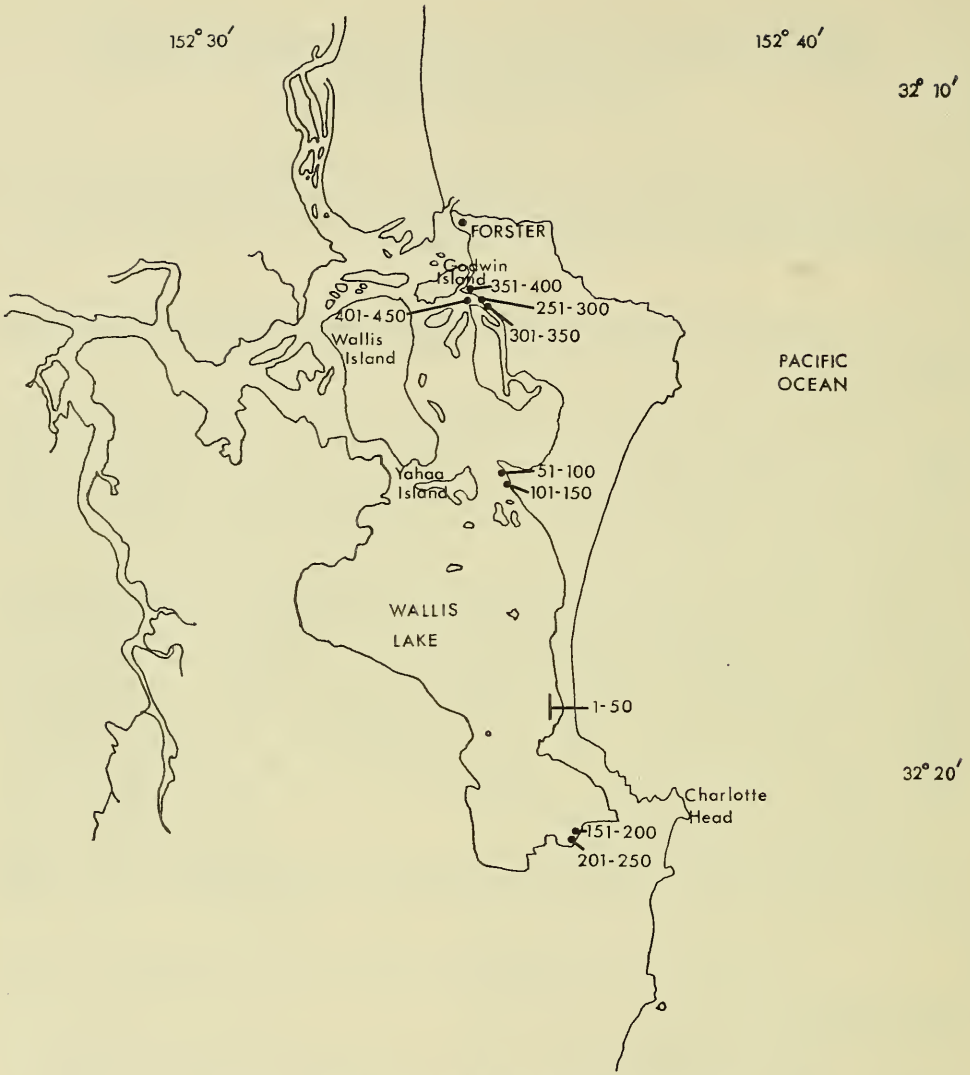

Fig. 1. Wallis Lake showing station numbers.

beginning of this century by Haswell, Benham, Augener and Fauvel and more recently by Rullier (1965) and Knox and Cameron (1971). For this reason there are many undescribed species of polychaetes in Australia, and the geographical distribution of described species is poorly known.

This is the first of a series of papers which will describe the polychaete fauna of estuaries and coastal lagoons on the eastern coast of Australia.

Systematic Account

The nomenclature is that of Hartman (1959*a*, 1965) except for the sub-genus *Hediste*, where Pettibone (1963) has been followed. Synonymies have been given only when they refer to Australian records.

Species List

Polynoidae	*Eunoe etheridgei* Benham
Sigalionidae	*Sthenelais boa* (Johnston)
Phyllodocidae	*Eulalia* sp.
	Phyllodoce duplex McIntosh
Nereidae	*Australonereis ehlersi* (Augener)
	Ceratonereis mirabilis Kinberg
	Nereis (*Hediste*) *diversicolor* O. F. Müller
	Platynereis dumerilii antipoda Hartman
Nephtyidae	*Nephtys australiensis* Fauchald
	Nephtys n. sp.
Glyceridae	*Glycera americana* Leidy
Eunicidae	*Marphysa sanguinea* Montagu
Lumbrineridae	*Lumbrineris latreilli* Audouin and Milne Edwards
Arabellidae	*Arabella* sp.
Spionidae	*Prionospio malmgreni* Claparède
	Scolelepis sp.
Cirratulidae	*Cirriformia tentaculata* Montagu
Orbiniidae	*Haploscoloplos simplex* n. sp.
Opheliidae	*Armandia intermedia* Fauvel
Scalibregmidae	*Hyboscolex longiseta* Schmarda
Capitellidae	*Barantolla lepte* n. sp.
	Notomastus hemipodus Hartman
	Scyphoproctus djiboutiensis Gravier
Arenicolidae	*Arenicola bombayensis* Kewalramani *et al.*
Maldanidae	*Euclymene trinalis* n. sp.
Oweniidae	*Owenia fusiformis* della Chiaje
Terebellidae	*Lysilla apheles* n. sp.
	Lysilla pacifica Hessle
	Streblosoma amboinense Caullery
	Rhinothelepus lobatus n. g., n. sp.
	Pista sp.
Sabellidae	*Branchiomma cingulata* (Grube)

Family POLYNOIDAE Malmgren, 1867

Genus Eunoe Malmgren, 1865

Eunoe etheridgei Benham, 1915

Harmothoe (*Eunoa*) *etheridgei* Benham, 1915 : 197–200, figs 43–51.

Stations

351–400, two specimens.

Remarks

This species has not been recorded since Benham (1915) described it from off Gabo Island, Victoria, in 200 fathoms. The Wallis Lake specimens agree well with the description given by Benham. The median and lateral antennae are darkly pigmented. The elytra are covered in small greyish black spots, with some black conical tubercles scattered along the posterior margins. The elytral margins are heavily fringed with papilla.

Previously known distribution

Off Gabo Island, Victoria, Australia, in 200 fathoms.

Family SIGALIONIDAE Malmgren, 1867
Genus Sthenelais Kinberg, 1855
Sthenelais boa (Johnston, 1839)

Sigalion boa Johnston, 1839 : 439.
Sthenelais boa.—Fauvel, 1923 : 110, fig. 41*a*-1 ; Day, 1967 : 109, fig. 1.20 f-1.

Stations
351–400, several specimens.

Remarks
This species has been recorded from Moreton Bay, Queensland, by Rullier (1965).

Previously known distribution
Atlantic from Scotland ; English Channel ; North Carolina, U.S.A. ; south to Senegal ; Mediterranean ; and S. Africa.

Family PHYLLODOCIDAE Williams, 1852
Genus Eulalia Savigny, 1817
Eulalia sp.

Stations
151–200.

Remarks
A small anterior fragment, which cannot be positively identified to species.

Genus Phyllodoce Savigny, 1818
Phyllodoce duplex McIntosh, 1885

Phyllodoce duplex McIntosh, 1885 : 167–168, pl. 27, fig. 8, pl. 32, fig. 9, pl. 15*a*, fig. 1 ; Augener, 1913 : 126.

Stations
401–450, one specimen.

Remarks
One specimen with a partially everted proboscis. Central discs of brown pigment between each segment.

Previously known distribution
Twofold Bay, New South Wales, in 150 fathoms ; and Port Phillip Bay, Victoria, Australia.

Family NEREIDAE Johnston, 1865
Genus Australonereis Hartman, 1954
Australonereis ehlersi (Augener, 1913)

Nereis (*Leonnates*) *ehlersi* Augener, 1913 : 142–145, pl. 3, fig. 53, text-fig. 12*a-c*.
Leonnates ehlersi.—Monro, 1938 : 618–628, figs 7–13.
Leptonereis ehlersi.—Monro, 1938 : 618–628, figs 7–13.
Australonereis ehlersi.—Hartman, 1954 : 19–23, figs 1–6.

Stations
1–50, 101–150, 251–300 ; 13, eight and seven specimens respectively.

Remarks

This species is commonly found in sandy muddy habitats in estuarine or lagoon situations. It lives in a limp sandy tube.

Previously known distribution

Western Australia ; Victoria ; and New South Wales ; and the author has also found it in Hervey Bay, Queensland, Australia.

Genus Ceratonereis Kinberg, 1866

Ceratonereis mirabilis Kinberg, 1866

Ceratonereis mirabilis Kinberg, 1866 : 170 ; Day, 1967 : 324, fig. 14.10*a-g*.

Stations

301–350, 351–400, many specimens.

Remarks

This species appears to be widespread throughout Australia and has been recorded from *Zostera* beds, intertidally in sand, in mussel clumps and offshore in 30-40 fathoms.

Previously known distribution

Brazil ; Gulf of Mexico ; Red Sea ; Indo-West Pacific to Japan ; Solomon Islands ; and Australia.

Genus Nereis Linnaeus, 1758

Nereis (*Hediste*) *diversicolor* O. F. Müller, 1776

Nereis diversicolor.—Fauvel, 1923 : 344, fig. 133*a-f*.

Nereis (*Hediste*) *diversicolor* Pettibone, 1963 : 174-179, fig. 44*g-h*.

Neanthes diversicolor Hartman, 1960 : 35.

Stations

1–50, 101–150, 201–250, 251–300, numerous specimens.

Description

This species is characterized by the presence of one or two simple falcigers, in the supra acicular neuropodial lobe of posterior segments. These setae are formed by the complete fusion of the end piece to the shaft of the falciger. All the notopodial setae are spinigerous. The arrangement of the paragnaths is as follows : I—0–9, II and IV—arched group, III—transverse mass of 2–3 irregular rows, V—0, VI—1–9, VII–VIII—wide scattered band of 1–2 irregular rows.

Remarks

Hartman (1960) placed this species in the genus *Neanthes* as the notosetae consist only of spinigers, and conical paragnaths are usually present on all areas of the proboscis. *N. diversicolor* is very similar morphologically to *N. japonica* Izuka and *N. limnicola* Johnson. These species can only be distinguished by their reproductive habit and the morphology of the sexually mature animals. Hartman (1959*b*, 1960) has suggested that all these species should be referred to *N. diversicolor*. Pettibone (1963) considers the three species to be valid and has suggested that they are placed in a separate subgenus *Hediste* to denote their close relationship. All these species are characterized by the simple falcigers. Unfortunately none of the specimens from Wallis Lake were sexually mature, so at this stage they are referred to *N. diversicolor*.

It seems likely that *Neanthes uncinula* Russell, described from the *Zostera* beds of Moreton Bay, Queensland (Russell, 1962), and which Rullier (1965) subsequently described from the same locality, may be synonymous with *N. diversicolor* or a member of this species complex. It differs from *N. diversicolor* in that paragnaths are absent from VI whereas *N. diversicolor* has 1–9 paragnaths on VI. But this problem cannot be resolved until a sexually mature individual of *N. uncinula* and its reproductive biology are described.

In Europe, *N. diversicolor* is common intertidally, in brackish or estuarine conditions, in mud, or muddy sand. It is often associated with weed beds. Similar conditions are present in Wallis Lake. *N. diversicolor* has not previously been recorded from the southern hemisphere.

Previously known distribution

Greenland; Iceland; Norway to English Channel; North Sea; Baltic; Mediterranean; Adriatic; Gulf of St. Lawrence to Massachusetts, U.S.A.; and Puerto Rico (?).

Genus Platynereis Kinberg, 1866

Platynereis dumerilii antipoda Hartman, 1954

Nereis (*Platynereis*) *australis*.—Augener, 1913: 182–184; 1923: 35–39. Not *Heteronereis australis* Schmarda, 1861.

Platynereis dumerilii antipoda Hartman, 1954: 35–36, figs 33–37.

Stations

201–250, one specimen.

Remarks

This species agrees well with the description given by Hartman (1954). *P. dumerilii antipoda* has only been described from Australia, whereas the nominate subspecies *P. dumerilii dumerilii* is cosmopolitan in temperate and tropical waters.

Previously known distribution

N.W. Tasmania; St. Vincent Gulf and Pennington Bay, South Australia; and Sydney, New South Wales.

Family NEPHTYIDAE Grube, 1850

Genus Nephtys Cuvier, 1817

Nephtys australiensis Fauchald, 1965

Nephtys australiensis Fauchald, 1965: 334–335, figs 1–2.

Stations

51–100, 101–150, 151–200, 201–250, 251–300, 351–400; one, 13, 28, four, many, six specimens respectively.

Remarks

This species is commonly distributed throughout weed beds and muddy sand flats in New South Wales, and the author has recorded it from Hervey Bay, Queensland.

Previously known distribution

South Australia and New South Wales, Australia.

Genus NEPHTYS Cuvier, 1817
Nephtys n. sp.

Stations
401–450, numerous specimens.

Remarks
This is a new species which is being described by Hannelora Paxton (1974), therefore no further comment is made here except to record its presence in Wallis Lake.

Family GLYCERIDAE Grube, 1850
Genus GLYCERA Savigny, 1818
Glycera americana Leidy, 1855

Glycera americana Leidy, 1855 : 147–148, pl. 11, figs 49–50 ; Augener, 1922 : 29–35 ; 1927 : 196 ; Knox, 1960 : 221–223, figs 1–3.

Stations
251–300, one specimen.

Description
The gills begin on the XVI–XVII segment and continue to near the posterior end. They arise from the posterior side of the parapodia. Each gill is a ramose structure borne on a short basal stem.

Previously known distribution
East coast of America from New England to Brazil ; west coast of America from Canada to Peru ; New Zealand ; South Australia, Victoria, Queensland, and New South Wales in Australia.

Family EUNICIDAE Savigny, 1818
Genus MARPHYSA Quatrefages, 1865
Marphysa sanguinea (Montagu, 1815)

Nereis sanguinea Montagu, 1815 : 20.
Marphysa sanguinea.—Fauvel, 1923 : 408, fig. 161*a-h* ; Day, 1967 : 396, figs 17.5*u-y*.
Marphysa furcellata Crossland, 1903 : 141, pl. 15, figs 13–14 ; Augener, 1913 : 281.

Stations
301–350, 351–400, three specimens.

Remarks
Commonly found in weed beds of *Zostera* or *Posidonia* in New South Wales.

Previously known distribution
N. Atlantic ; English Channel ; Mediterranean ; Senegal ; North Carolina, U.S.A., to the Gulf of Mexico ; Southern California ; Japan ; New Zealand ; Western Australia, Moreton Bay and the Great Barrier Reef, Queensland, Australia.

Family LUMBRINERIDAE Malmgren, 1867
Genus LUMBRINERIS Blainville, 1828
Lumbrineris latreilli Audouin and Milne Edwards, 1833

Lumbrineris latreilli Audouin and Milne Edwards, 1833 : 242, pl. 12, figs 13–15 ; Day, 1967 : 438, figs 17.16*p-t*.
Lumbriconereis latreilli.—Fauvel, 1923 : 431, fig. 171*m-r*.

Stations

51–100, one specimen.

Remarks

The specimen fits the description given by Day well except that the blade of the compound hooks present in the anterior parapodia appears slightly shorter. This species has previously been recorded from Australia in Port Phillip Bay, Victoria, by Knox and Cameron (1971).

Previously known distribution

Cosmopolitan in temperate and tropical seas.

Family Arabellidae Hartman, 1944

Genus Arabella Grube, 1850

Arabella sp.

Stations

251–300, one fragment.

Remarks

A small posterior fragment.

Family SPIONIDAE Grube, 1850

Genus Prionospio Malmgren, 1867

Prionospio malmgreni Claparède, 1870

Prionospio malmgreni Claparède, 1870 : 73 ; Day, 1967 : 492–493, fig. 18.9*a-c* ; Hartman, 1969 : 161, figs 1–4.

Stations

51–100, 151–200, 201–250, 251–300, 301–350, 351–400 ; several specimens collected at each locality.

Remarks

P. malmgreni is distinguished by the presence of a prominent transverse membranous ridge which unites the lamellae of setiger 7. Less conspicuous ridges are present on the next few segments. Pluridentate hooded hooks appear in the neuropodia from setiger 14 and in the notopodia after setiger 40.

Previously known distribution

Atlantic from North Carolina, U.S.A. ; North Sea ; Mediterranean ; South California ; Japan ; and Solomon Islands.

Genus Scolelepis Blainville, 1828

Scolelepis sp.

Stations

251–300, 351–400.

Remarks

A few anterior fragments were found which could not be positively identified. The neuropodial setae are long hooded hooks with two teeth above the main fang. The notopodial setae are very narrow winged capillaries. Some of the fragments are full of large oocytes.

Family CIRRATULIDAE Carus, 1863
Genus CIRRIFORMIA Hartman, 1936
Cirriformia tentaculata (Montagu, 1808)

Terebella tentaculata Montagu, 1808 : 110.
Audouinia tentaculata.—Fauvel, 1927 : 91, fig. 32*a-g*.
Cirriformia tentaculata.—Day, 1967 : 515, fig. 20 : 4*a-d*.

Stations

251–300, 301-350, 351–400 ; few specimens.

Previously known distribution

North Sea ; English Channel ; W. Africa ; S. Africa ; Indian Ocean ; Japan ; New Caledonia ; New Zealand ; and Port Phillip Bay, Victoria, Australia.

Family ORBINIIDAE Hartman, 1942
Genus HAPLOSCOLOPLOS Monro, 1933
Haploscoloplos simplex n. sp.
(Fig. 2A-D)

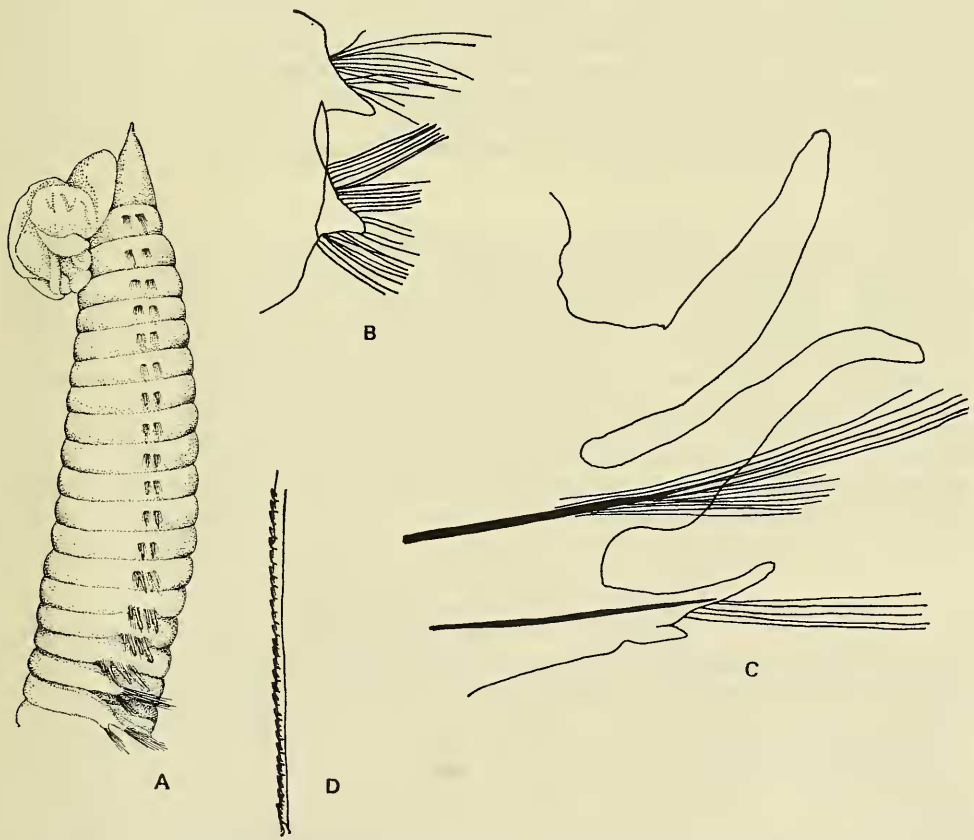

Fig. 2. *Haploscoloplos simplex*. A, Anterior lateral view. B, Early thoracic parapodium. C, Abdominal parapodium. D, Side view of part of notopodial seta.

Holotype (AM. W.5246) complete specimen 6·5 cm in length, 2 mm wide. Paratypes (AM. W.5002, W.5004, W.5005), eight, four and 11 specimens respectively (BM. ZB.1973 : 1) (USNM. 49487).

All material collected from Stations 401–450, which is a sandy habitat.

Description

Preserved specimens white. Transition from thorax to abdomen is at setigerous segments 16–18. Branchiae are present from the 12th segment onwards. The thoracic branchiae are small, but the abdominal ones are well developed simple cylindrical filaments. The prostomium is a tapered cone. Faded eye spots are arranged in two oval patches at the base of the prostomium.

In the thorax the notopodial postsetal lobe is a small elongated lobe which gradually increases in size towards the posterior thorax, but it never exceeds one-third of the length of the setae. The thoracic neuropodial postsetal lobe is present from the 9th setiger and is a simple narrow triangular lobe. No interramal cirri or stomach papillae are present on the thorax or abdomen. The thoracic neurosetae consist of two types, (1) long distally pointed spinous setae, which when viewed side on have a toothed appearance, and (2) 10–15 simple acicular type setae with a slightly bent tip. The bases of these setae appear to be split, and they are slightly more chitinized than the spinous setae.

In the abdomen the branchiae are well developed simple cylindrical filaments with tapered tips. The postsetal abdominal notopodial lobe is a simple narrow leaf-shaped lobe and is the same length as the notosetae. The corresponding neuropodial lobe is smaller than the notopodial lobe and is split unequally just below the tip. The dorsal part is well developed, whereas the ventral part is much smaller. The abdominal neuropodia are supported by a single yellow aciculum. All the abdominal setae are spinous, no furcate setae are present. The posterior ventral margins of the segments have slightly thickened glandular edges.

Remarks

Haploscoloplos simplex can be distinguished from *H. bifurcatus* Hartman, which has been recorded from New South Wales and South Australia, by the absence of divided thoracic neuropodial postsetal lobes. The only other species of this genus recorded from Australia is *H. kerguelensis* (McIntosh), which differs from *H. simplex* in that the transition from thorax to abdomen occurs between segments 9–11, and thoracic branchiae are absent. *H. simplex* can be distinguished from all other species of this genus except *H. panamensis* Monro by the presence of simple branchiae and the segment on which they begin and also the segments at which the transition from thorax to abdomen occurs. *Haploscoloplos panamensis* closely resembles *H. simplex* but differs in that the posterior thoracic neuropodial postsetal lobe is divided and that furcate setae are present.

Family OPHELIIDAE Malmgren, 1867

Genus Armandia Filippi, 1861

Armandia intermedia Fauvel, 1902

Armandia intermedia Fauvel, 1902 : 86, figs 29-30 ; Day, 1957 : 104.
Armandia lanceolata Willey, 1905 : 288, pl. 5, fig. 120 ; Augener, 1914 : 33.

Stations

201-250, three specimens.

Remarks

This species has previously been recorded from Australia as *A. lanceolata*, which Day (1957) synonymized with *A. intermedia*.

Previously known distribution

Red Sea ; Ceylon ; Japan ; New Caledonia ; Solomon Islands ; N.W. Australia ; Low Isles, Queensland, and Port Phillip Bay, Victoria, Australia.

Family SCALIBREGMIDAE Malmgren, 1867

Genus HYBOSCOLEX Schmarda, 1861

Hyboscolex longiseta Schmarda, 1861

Hyboscolex longiseta Schmarda, 1861 : 54, pl. 27, fig. 211 ; Day, 1967 : 588–589, fig. 27.2*a-d*.

Lipobranchius capensis Willey, 1904 : 266, pl. 14, fig. 14, pl. 15, figs 23–24.

Stations

301–350, 351–400 ; six specimens.

Remarks

This is the first record of this family from Australia, although this species has been recorded from New Zealand. The specimens from Wallis Lake are 10–15 mm long with a prominent T-shaped prostomium. The eyes are completely hidden by the peristomial fold.

Previously known distribution

Natal, S. Africa ; S.W. Africa ; New Zealand ; and Solomon Islands.

Family CAPITELLIDAE Grube, 1862

Genus BARANTOLLA Southern, 1921

Barantolla lepte n. sp.

(Fig. 3A-D)

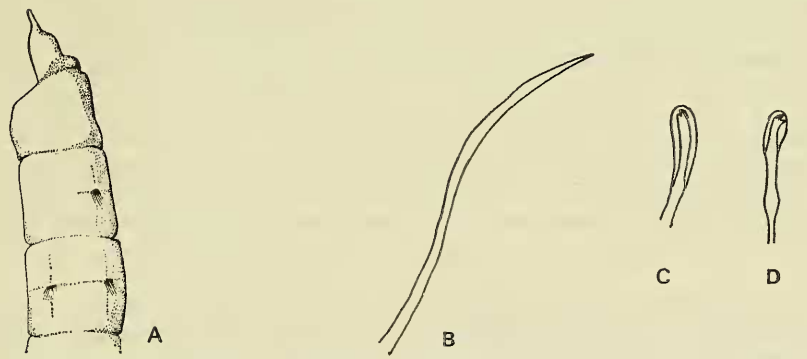

Fig. 3. *Barantolla lepte*. A, Anterior lateral view. B, Thoracic capillary seta. C, Thoracic hooded hook. D, Abdominal hooded hook.

Holotype (AM. W.5407) Station 1–50, incomplete specimen, 45 mm long, 1 mm wide with 65 abdominal segments.

Paratypes (AM. W.5413) Station 1–50, five specimens ; (AM. W.5414) Station 1–50, 55 specimens ; (AM. W.5415) Station 101–150, 55 specimens ; (AM. W.5408) Station 151–200, 220 specimens ; (AM. W.5416) Station 151–200, 35 specimens ; (AM. W.5412) Station 151–200, 15 specimens ; (AM. W.5411) Station 201–250, five specimens ; (AM. W.5409) Station 251–300, 42 specimens ; (AM. W.5410) Station 351–400, 13 specimens ; (BM. ZB.1973 : 4) Station 256, 10 specimens ; (USNM. 49489) Station 252, 10 specimens.

This species is found in a wide range of habitats from sand, mud and weed beds.

Description

Small thread-like worms, encased in a fine mucous sandy tube. There are no visible branchiae. The thorax consists of 11 setigerous segments and the abdomen of numerous segments. The pygidium is a heart-shaped lobe without appendages. The prostomium is a pointed cone with a slightly bulbous tip. On either side of the base of the prostomium is a slanting patch of 10–15 sub-epidermal eye spots.

The first thoracic segment is apodous and is twice the length of the first setigerous segment, which has only a fascicle of notosetae. The setae of thoracic segments 2–7 are narrow winged capillaries. The remaining thoracic segments 8–12 have long-handled hooded hooks in both the neuro- and notopodia. There are no mixed fascicles of capillary setae and hooks. The formula of the thoracic setae may be expressed as follows :

$$\text{First thoracic segment} + \frac{6s+5h}{0+5s+5h}$$

where s refers to capillary setae and h to hooded hooks.

Segments 8–12 are slightly longer than the preceding ones and are slightly bi-annulate. The transition from the thorax to the abdomen is well marked as abdominal setae are borne on raised glandular tori. Both fascicles of notosetae are borne on the same torus, whereas the fascicles of neurosetae are on separate tori. These glandular tori give the abdominal segments a slightly capanuliform shape. All the abdominal setae are short-hooded hooks. The abdominal epidermis is marked by a series of narrow rings.

Remarks

Barantolla lepte is placed in the genus *Barantolla* as it has 12 thoracic segments, of which 11 are setigerous. The notosetae of the first six setigerous segments are capillary setae, and the remaining thoracic notosetae are hooded hooks. Only two other species of this genus have been described—*B. sculpta* Southern and *B. americana* Hartman. *B. lepte* can be distinguished from *B. sculpta* by the absence of abdominal segments with a membranous collar from which parapodial lobes and branchiae arise. *B. sculpta* has only been recorded from brackish pools near Salt Lake, Calcutta, India. The other described species, *B. americana*, differs from *B. lepte* in that the first eight thoracic neuropodia have capillary setae, where in *B. lepte* only the first five have capillary setae. The formulae for the thoracic setae of *B. americana* may be expressed as follows :

$$\text{First thoracic segment} + \frac{6s+1 \text{ mixed}+4h}{8h+3h}$$

More recently Hartman (1971) has described some specimens as " *Barantolla* near *americana* " from abyssal depths of 2,000–3,753 m, off southern California. These specimens have capillary setae in the first six thoracic, neuropodia and therefore they can also be distinguished from *B. lepte*. The formulae for the thoracic setae of " *B.* near *americana* " may be expressed as follows :

$$\text{First thoracic segment} + \frac{6s+1 \text{ mixed}+4h}{6s+5h}$$

Genus Notomastus Sars, 1851

Notomastus (*Clistomastus*) *hemipodus* Hartman, 1947

Notomastus (*Clistomastus*) *hemipodus* Hartman, 1947 : 424, fig. 48 ; 1969 : 393, figs 1–5.

Stations

1–50, 51–100, 101–150, 151–200, 201–250, 251–300, 301–350, 351–400; numerous specimens.

Description

Dark red in colour when alive, and often encased in a mucous tube with some sand grains adhering. Epithelium of anterior thoracic segments aereolated. Prostomium, depressed and conical, with two small patches of eye spots, almost hidden by the transverse nuchal slits. Peristomium a simple ring with no setae. Eleven thoracic setigerous segments, of which the first lacks neurosetae. All thoracic setae are capillaries. Numerous abdominal segments with no visible branchiae. Abdominal setae are long-handled hooks ; a crescent of 5–6 small teeth above the main fang. Small glandular patches around the abdominal podia. Nephridial apertures present on the ventral side of the neuropodia.

Remarks

This species has only previously been recorded intertidally from Beaufort, N. Carolina, and from 97 m in Newport Canyon on the west coast of America.

Previously known distribution

Beaufort, N. Carolina, and Newport Canyon, U.S.A.

Genus Scyphoproctus Gravier, 1904

Scyphoproctus djiboutiensis Gravier, 1904

Scyphoproctus djiboutiensis Gravier, 1904 : 557–561, figs 1–7 ; Fauvel, 1953 : 373, fig. 194*a-b* ; Day, 1967 : 604–605.

Stations

351–400 ; four specimens.

Description

This species has 12 thoracic setigers with capillary setae in both rami. Numerous abdominal thin-walled segments, with no gills present. The final abdominal segments are fused to the pygidium to form an anal plate. The plate slants posteriorly and is flattened dorsally and on its margins there are 10–12 groups of notopodial spines.

Remarks

This species has not been previously recorded from Australia.

Previously known distribution

Tropical Indian Ocean from Gulf of Aden ; Ceylon ; and Mozambique.

Family Arenicolidae Johnston, 1846

Genus Arenicola Lamarck, 1801

Arenicola bombayensis Kewalramani, Wagh and Ranade, 1959

Arenicola cristata.—Ashworth, 1911 : 21–24 ; 1912 : 105–111, fig. 45 ; Augener, 1914 : 42. Not *Arenicola cristata* Stimpson, 1856.

Arenicola bombayensis Kewalramani, Wagh and Ranade, 1959 : 109 ; Wells, 1962 : 347–348, pl. 2–3.

Stations

201–250 ; several specimens.

Description

These worms were kindly identified by Professor G. P. Wells.

This species is characterized by 17 setigers, of which setigers VII to XVII are branchiferous. In life the stout pinnate gills are olive green in colour. There are seven pairs of nephridia which open on setigers V to XI.

Remarks

This species was first described from an intertidal mud flat near Bombay in 1959 by Kewalramani *et al.* In 1911 Ashworth described a variant of *A. cristata* from Barrow Island, N.W. Australia, and Augener (1914) confirmed this identification. Since then Wells (1962) has re-examined the specimens and referred them to *A. bombayensis.* The material from Wallis Lake represents the only other record of this species from Australia.

Previously known distribution

Bombay, India ; and Barrow Island, N.W. Australia.

Family MALDANIDAE Malmgren, 1867
Genus EUCLYMENE Verrill, 1900
Euclymene trinalis n. sp.
(Fig. 4A-F)

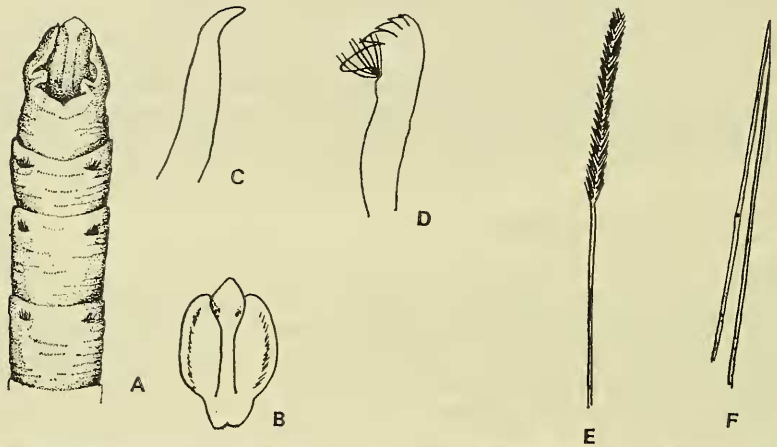

Fig. 4. *Euclymene trinalis.* A, Anterior end. B, Cephalic plate. C, Modified neuroseta from 3rd setiger. D, Neuroseta from posterior segments. E, F, notosetae.

Holotype (AM. W.5224). Station 251–300, complete specimen 6·5 cm in length and 2 mm wide at anterior end.

Paratype (AM. W.5227). Station 151–200, complete specimen 4·5 cm in length and 1 mm wide at anterior end.

Fragments of this species were also found at Stations 151–200 and 251–300. All specimens were living in sand or sandy mud habitats.

Description

Lives in firm sandy tubes. Reddish brown in colour. Small pointed prostomium. The cephalic plate is oval with small lateral indentations. The posterior margins of the plate are smooth with a small notch mid-posteriorly. Nuchal folds straight, and seven-eighths the length of the cephalic plate. A few ocelli present at the top of the nuchal folds, but they are more numerous on the anterior lateral sides of the cephalic rim and on the prostomium.

Body with 19 setigers and two achaetous preanal segments. First preanal segment slightly longer than second. Prominent pygidial ring. Anal funnel with 27–29 approximately equal triangular lobes plus one very much longer lobe. The tips of the lobe are tinged with bluish black pigment. The anus is sunk in the centre of the anal funnel surrounded by numerous radii. First five setigerous segments are approximately the same length, the segments then

increase in length until segment 7, this length being maintained until the final two setigerous segments, which are shorter. The first five setigerous segments have a narrow collar which makes the segments appear slightly bell-shaped. The epidermis of the head is deeply aereolated. The last five setigerous segments are tinged with bluish green pigment and the epidermis is marked with numerous narrow rings. A narrow ventral longitudinal glandular strip is present on posterior segments.

Neurosetae of first three setigerous segments are simple smooth tipped acicular setae. The holotype and paratype show variation in the numbers of these acicular neurosetae and the number is not necessarily constant for a segment. The holotype has four, two, one on one side and one, one, three on the other side. The paratype has one, two, one and one, one, two respectively. The size of the acicular setae is not constant and where only a single one is present this tends to be very much larger than when four are present. Other fragments of this species found at the same stations exhibit similar variation. The remaining neurosetae have four teeth above the main fang with a well developed tendon. The rows of neurosetae are surrounded by patches of glandular tissue. On the posterior segments the neurosetae are on well marked raised glandular ridges which are joined dorsally by a thin strip of glandular material. Notosetae are of two kinds : (1) simple narrow bladed capillary setae with fine pointed tips, and (2) capillary setae with the posterior third finely barbed.

Remarks

Within the genus *Euclymene*, variation in the number of setigers and acicular setae is fairly common, but variation in the number of acicular setae within a segment has not been reported previously. Several species of *Euclymene* have 19 pairs of setigers, but they differ from *E. trinalis* in having one or three preanal segments, *E. tropica* (Monro) and *E. watsoni* (Gravier), *E. collaris* (Claparède) and *E. lombricoides* (Quatrefages) respectively. *E. trinalis* has a similar number of setigers and preanal segments to *E. papillata* Berkeley and Berkeley and *E. auklandica* Augener but differs in that the acicular setae are smooth tipped, lacking any signs of vestigial hooks.

E. glandularis (Day) appears to be the most closely related species to *E. trinalis*, but *E. glandularis* has a crenulated posterior margin of the cephalic plate and the neurosetae have 5–6 teeth above the main fang, whereas *E. trinalis* has a smooth posterior margin to the cephalic plate and the neurosetae have only four teeth above the main fang.

Family OWENIIDAE Rioja, 1917

Genus Owenia delle Chiaje, 1844

Owenia fusiformis delle Chiaje, 1844

Owenia fusiformis.—Day, 1967 : 649–651, fig. 31.1*e-j*.

Stations

51–100, 201–250 ; two specimens.

Remarks

Rullier (1965) recorded *O. fusiformis* from Moreton Bay, Queensland, and synonymized it with *Ammochares tenuis* Haswell. Haswell (1883) records that *A. tenuis* is exceedingly common in Port Jackson, Sydney, but unfortunately the type specimen cannot be found and is presumed lost. As the author has found *O. fusiformis* throughout the Sydney area, it seems likely that Rullier is correct in synonomizing *A. tenuis* with *O. fusiformis*.

Previously known distribution

Cosmopolitan.

Family TEREBELLIDAE Malmgren, 1867
Genus Lysilla Malmgren, 1866
Lysilla apheles n. sp.
(Fig. 5A)

Holotype (AM. W.5239). Station 190 incomplete specimen, 10 thoracic setigers and approximately 12 abdominal segments 15 mm in length, and diameter of anterior end 2·5 mm.

Paratypes (AM. W.5237, W.5239). Stations 184 and 155 respectively. Both lack posterior abdomen and have 10 and 20 abdominal segments respectively. (BM. ZB.1973 : 2). Station 189.

All material from a sandy mud clay substrate with sparse *Halophila*, a marine angiosperm.

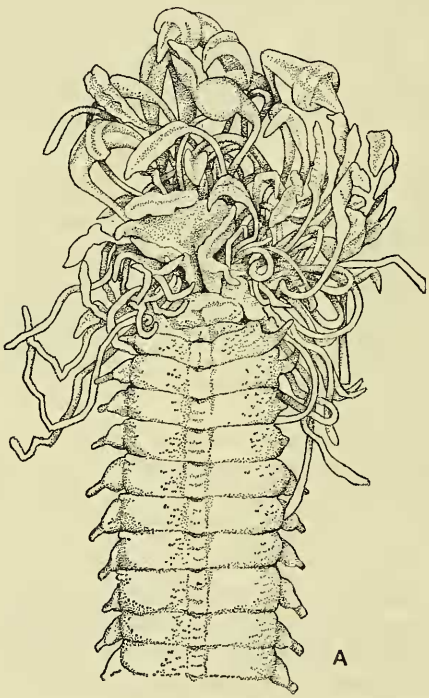

Fig. 5. *Lysilla apheles*. A, Ventral view of anterior end

Description

Short fat swollen body which is dark pink in colour, with crimson pink tentacles. Head with an anterior tongue-like upper lip, above which there is a broad trefoil frilly tentacular lobe which bears numerous tentacles. Three kinds of tentacles are present, small simple cylindrical filaments at the base of the tentacular lobe, larger grooved tentacles and a few tentacles in which the posterior part is spatulate. No eye spots or gills are present. Ten thoracic setigers and no abdominal setigers. The notosetae are simple smooth capillary setae. The extreme tips of these setae are finely serrated. The bundles of notosetae are enclosed in a setal sac. Neurosetae are completely absent.

Nephridial papillae are present on all setigerous segments but they are best developed on the middle setigerous segments. The papillae emerge from the bases of the setal sacs on the ventral side. The papillae are best developed on the holotype and least developed on paratype BM. ZB.1973–2 ; this probably reflects differences in the state of maturity of the specimens. Distinct narrow ventral groove running along the body. The entire ventral surface of the body is glandular and covered in small warts.

Remarks

This species is referred to the genus *Lysilla* as it lacks gills, neurosetae and abdominal notosetae. *L. apheles* differs from *L. pacifica* Hessle, which is also present in Wallis Lake, in that the notosetae are smooth winged capillaries and not barbed as in *L. pacifica*. Of the remaining described species of *Lysilla* only *L. loveni* Malmgren and *L. pambanensis* Fauvel have smooth winged capillary setae, but they have six and 13–18 pairs of setigers respectively, whereas *L. apheles* has 10 pairs of thoracic notosetae.

Lysilla pacifica Hessle, 1917

Lysilla pacifica Hessle, 1917 : 232–233, fig. 66 ; Imajima and Hartman, 1964 : 348.

Lysilla ubianensis Caullery, 1944 : 197, fig. 156*a-e* ; Day, 1967 : 721, fig. 36.3*i-j*. A new synonym.

Stations

51–100, 151–200, 301–350, 351–400 ; several specimens.

Remarks

Lysilla ubianensis, which Caullery (1944) described from Indonesia and which has subsequently been recorded from S. Africa and the Solomon Islands (Day, 1957, 1967 ; Gibbs, 1971), is synonymized with *L. pacifica* Hessle. In Hessle's description of *L. pacifica* he records finding two specimens with 12 pairs of barbed winged notosetae and one with nine pairs of notosetae. Similarly, in Wallis Lake some specimens have nine pairs while others have 12 pairs. However, one specimen has 11 pairs of notosetae, and this is also considered to be *L. pacifica* as Imajima and Hartman (1964) state that this species may have between nine and 12 pairs of notosetae. Two other specimens have 13 pairs of barbed notosetae, but apart from the extra pair of setae they fit the description of *L. pacifica*. No other species of *Lysilla* has 13 pairs of barbed notosetae.

Many of the specimens are full of eggs and the nephridiopores which are present on all setigerous segments are well developed on many specimens.

Previously known distribution

Indonesia ; S. Africa ; Japan.

Genus Streblosoma M. Sars, 1872

Streblosoma amboinense Caullery, 1944

Streblosoma amboinense Caullery, 1944 : 180–181, fig. 144*a-d*.

Stations 201–250 ; five specimens.

Description

Three pairs of gills on segments 2–4 consisting of 10–12 simple filaments each arising separately from the body wall. The gill filaments are dark green in freshly preserved specimens. Notosetae begin on the first branchiferous segment

and extend for 28–29 segments. Two kinds of notosetae are present: long narrow winged capillaries which have faintly striated edges, and short winged capillaries with smooth edges and finely pointed tips. The uncini begin on the fourth setigerous segment (segment 5) and are borne on low uncigerous ridges on the abdomen. The avicular uncini are similar to those shown by Caullery, but even within an individual there is some variation in the shape of the uncini. Nephridial papillae are present on setigers 2, 3 and 4.

Previously known distribution

Indonesia.

Rhinothelepus n. g.

The genus *Rhinothelepus* placed in the subfamily Thelepinae is characterized by an elongated tentacular lobe and by numerous simple gill filaments present on segments 2 and 3. Smooth tipped notosetae begin on segment 3 and continue for 15 segments. Uncini begin on setiger 6 and continue on to the abdomen. The uncini are short based with a subterminal dorsal button. No lateral lobes are present.

Type species.—*Rhinothelepus lobatus.*

Rhinothelepus lobatus n. g., n. sp.

(Fig. 6A-B)

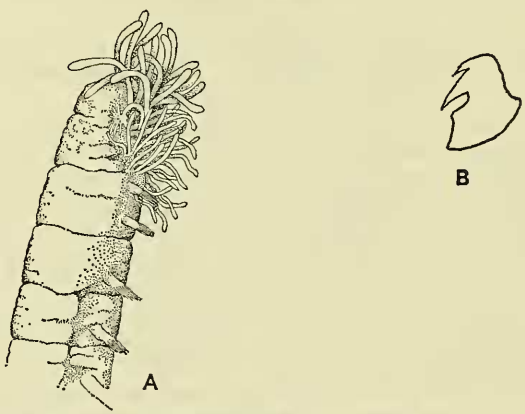

Fig. 6. *Rhinothelepus lobatus.* A, Lateral view of anterior end. B, Thoracic uncini.

Holotype (AM. W.5234). Station 380, incomplete specimen, 15 thoracic setigers and seven abdominal segments, 26 mm in length and 4 mm in diameter at anterior end.

Paratypes (AM. W.5228) Station 158, (AM. W.5229) Station 355, (AM. W.5230) Station 400, (AM. W.5231) Station 360, (AM. W.5233) Station 375, (AM. W.5234) Station 380, (AM. W.5235) Station 355, (AM. W.5236) Station 370, (BM. ZB.1973 : 3) Station 374, (USNM. 49488) Station 370.

All the material collected either from sandy-mud clay or from *Zostera* beds.

Description

Lives in fine sandy mucus tubes. Tentacular lobe extended to form a U-shaped tongue-like projection which is bent back dorsally. Margins of the tentacular lobe are convoluted and bear numerous grooved tentacles. The tentacular lobe is glandular and the inner walls are strongly ridged. At the ventral base of the lobe are groups of small fine tentacles. Eye spots present.

Numerous simple gill filaments present on segments 2 and 3. The gills are arranged in two discrete groups separated by a distinct median gap. No lateral lobes on anterior segments; or distinct ventral pads. From about the tenth setigerous segment onwards a narrow ventral glandular strip present. Notosetae begin on segment 3 (second branchiferous) and continue for 15 segments. The setae are smooth tipped narrow winged capillaries. The avicular uncini begin on the sixth setigerous (segment 8) and continue on to the abdomen. As no completely intact specimens have been found, it is not known if the uncini continue to the pygidium. The abdominal uncini are borne on narrow long rectangular pinnules and are arranged in single rows throughout. The uncini are short based with a subterminal dorsal button on a deep prow. Prominent nephridial papillae are present on setigers 4 and 5.

Remarks

This species clearly belongs to the subfamily Thelepinae as it has simple cylindrical gill filaments, smooth tipped notosetae and because of the shape of the uncini. The specimens from Wallis Lake closely resemble *Telothelepus capensis* Day in having an elongated tentacular lobe, but they differ as to the segment on which the uncini begin. The segment on which the neuro- and notosetae begin is a very important generic character in genera, belonging to the subfamily Thelepinae. For this reason a new genus, *Rhinothelepus*, has been created, for no other genus in this subfamily has neurosetae beginning an segment 8.

Genus Pista Malmgren, 1866

Pista sp.

Stations

201–250; one incomplete specimen.

Remarks

A small anterior fragment with two pairs of tufted whorls of gills. The uncini of segments 5 and 6 have posteriorly elongated bases. This is probably an undescribed species but in view of the condition of the specimen it is not being described.

Family SABELLIDAE Malmgren, 1867

Genus Branchiomma Kölliker, 1858

Branchiomma cingulata (Grube, 1870)

Sabella (*Dasychone*) *cingulata* Grube, 1870: 67–68.
Dasychone cingulata.—Augener, 1914: 213.
Branchiomma cingulata.—Imajima and Hartman, 1964: 335.

Stations

201–250; a single specimen.

Remarks

The radioles are transversely striped with alternate bands of purple and reddish brown.

Previously known distribution

Victoria, New South Wales, Western Australia; Japan; Indo-Pacific; Fiji; and Solomon Islands.

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